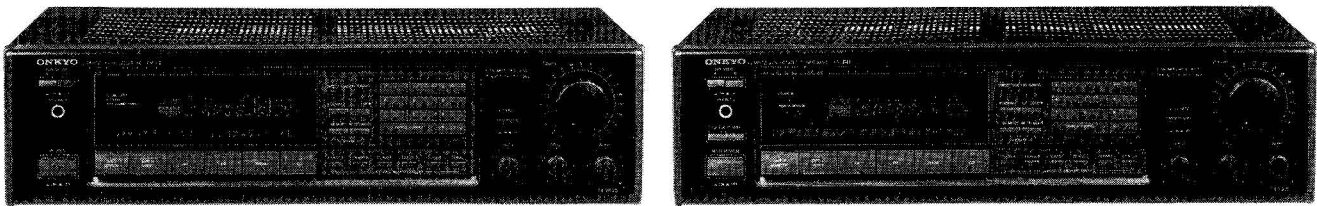


# ONKYO SERVICE MANUAL

## QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-7900 MODEL TX-7920



Black and Silver models

**SAFETY-RELATED COMPONENT WARNING!!**  
COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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## SPECIFICATIONS

## AMPLIFIER SECTION

## Power Output:

## TX-7920

60 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40Hz to 20kHz, with no more than 0.2% THD.

## Dynamic Power Output:

2 × 100 watts at 4 ohms

2 × 75 watts at 8 ohms

## Continuous Power Output:

2 × 80 watts at 4 ohms, 1kHz (DIN)

2 × 65 watts at 8 ohms, 1kHz (DIN)

## Total Harmonic Distortion:

0.2% at rated power

0.1% at 30 watt output

## IM Distortion:

0.2% at rated power

0.1% at 30 watt output

## Damping Factor:

50 at 8 ohms

## Frequency Response:

20 — 30,000 Hz ± 1dB

## RIAA Deviation:

20 — 20,000 Hz ± 0.8dB

## Sensitivity and Impedance:

Phono: 2.5mV/50 kohms

CD/Tape Play: 150mV/50 kohms

Tape Rec: 150mV/3.5 kohms

## Phono Overload:

120mV RMS at 1kHz, 0.2% THD

## Signal-to-Noise Ratio:

Phono: 80dB (at 5mV input, IHF-A)

CD/Tape: 100dB (IHF-A)

## Tone Controls:

Bass: ± 10dB at 100Hz

Treble: ± 10dB at 10kHz

## Muting:

— ∞

## LOUDNESS (−30dB):

+7dB at 70Hz, +5dB at 10kHz

## TX-7900

45 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40kHz to 20kHz, with no more than 0.3% THD.

2 × 80 watts at 4 ohms

2 × 60 watts at 8 ohms

2 × 60 watts at 4 ohmsm, 1kHz (DIN)

2 × 50 watts at 8 ohms, 1kHz (DIN)

0.3% at rated power

0.1% at 30 watt output

0.3% at rated power

0.1% at 30 watt output

50 at 8 ohms

20 — 30,000 Hz ± 1dB

20 — 20,000 Hz ± 0.8dB

Phono: 2.5mV/50 kohms

CD/Tape Play: 150mV/50 kohms

Tape Rec: 150mV/3.5 kohms

120mV RMS at 1kHz, 0.3% THD

Phono: 80dB (at 5mV input, IHF-A)

CD/Tape: 100dB (IHF-A)

Bass: ± 10dB at 100Hz

Treble: ± 10dB at 10kHz

—

+7dB at 70Hz, +5dB at 10kHz

## TUNER SECTION

## FM:

## Tuning Range:

87.50—108.00MHz (50kHz steps)

## Usable Sensitivity:

Mono: 12.4dBf, 1.2 μV, 75ohms

1.2 μV (S/N 26dB, 40kHz Dev.)

75ohms DIN

Stereo: 19.2dBf, 2.5 μV, 75ohms

25 μV (S/N 46dB, Dev.)

75ohms DIN

## 50dB Quieting Sensitivity:

Mono: 18.2dBf, 2.2 μV, 75ohms

Stereo: 38.2dBf, 22 μV, 75ohms

## Capture Ratio:

1.5dB

## Image Rejection Ratio:

85dB

## IF Rejection Ratio:

90dB

## Signal-to-Noise Ratio:

Mono: 70dB

## Stereo: 65dB

Stereo: 65dB

## Selectivity:

50dB DIN (±300kHz, 40kHz dev.)

## AM suppression Ratio:

50dB

## Harmonic Distortion:

Mono: 0.15%

Stereo: 0.30%

## Frequency Response:

30—15,000Hz±1.5dB

## Stereo Separation:

40dB at 1kHz

30dB at 100—10,000Hz

## Muting Level:

17.2dBf, 4 μV

## AM:

## Tuning Range:

522—1610kHz (9kHz steps)

522—1610kHz (9kHz steps) or

530—1710kHz (10kHz steps) (World wide model)

## Usable Sensitivity:

30 μV

## Image Rejection Ratio:

40dB

## IF Rejection Ratio:

40dB

## Signal-to-Noise Ratio:

40dB

## Harmonic Distortion:

0.8%

## GENERAL

## TX-7920

## Dimensions (W×H×D):

455×120×316mm

17-15/16" ×4-6/8" ×12-7/16"

## Weight:

8.0kg, 17.6 lbs.

## TX-7900

455×120×316mm

17-15/16" ×4-6/8" ×12-7/16"

7.2kg, 15.9 lbs.

Remote control transmitter RC-223S (Only Model TX-7920)  
 Transmitter: Infrared  
 Signal range: Approx. 5 meters (16ft. × 4" )  
 Power supply: Two "AA" batteries(1.5V × 2)

Specifications and features are subject to change without notice.

## SERVICE PROCEDURES

### 1.Replacing the fuses

For continued protection against fire hazard,replace only with same type and same rating fuse.

Circuit No.	Part No.	Description	Model
F902	252074	2A-SE-EAK,Primary	TX-7900
F902	252075	2.5A-SE-EAK,Primary	TX-7920
F951	252074	2A-SE-EAK,AC outlet	TX-7920

### 2.Safety-check out

After correcting the original service problem,perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and nickel screw on the back panel.

Specifications: More than 10M $\Omega$

### 3.Changing the band step

A BAND STEP selector switch is not provided.

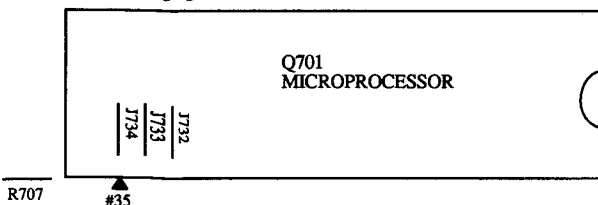
(FM)

BAND STEP	R707(10k $\Omega$ )	J734
200kHz $\rightarrow$ 50kHz	Add	Cut
50kHz $\rightarrow$ 200kHz		Shorted

(AM)

BAND STEP	R709(10k $\Omega$ )	J732
10kHz $\rightarrow$ 9kHz		Shorted
9kHz $\rightarrow$ 10kHz	Add	Cut

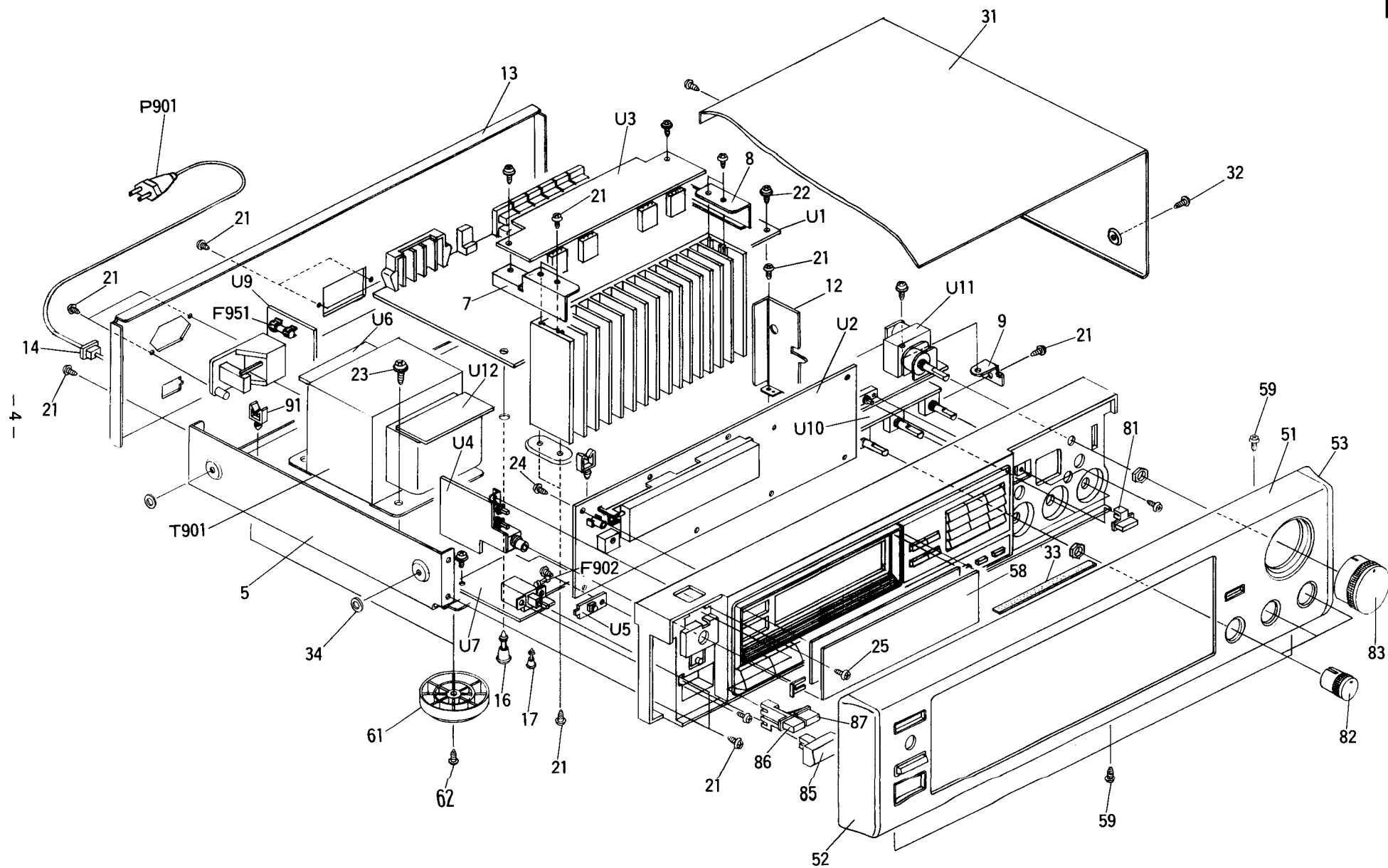
Refer to the page 21.



DISPLAY CIRCUIT PC BOARD

# EXPLODED VIEW

MODEL TX-7920



# PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	27110680Y	Front bracket <B>
	27110681Y	Front bracket <S>
4	28133254Y	Back plate
5	27100228Y	Chassis
6	27160293Y	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
9	27141443Y	Bracket PC
12	27130643AY	Bracket,shield
13	27121535-2Y	Back panel
14	27300750	△ Bushing
16	27190524	KGLS-14R,Holder
17	27190266	KGLS-12R,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	0.5×180×8,Cushion
34	27270212	Spacer <P/W/Q>
51	1A333701K	Front panel ass'y <B>
	1A334701K	Front panel ass'y <S>
52	28125226BY	End cap L
53	28125227BY	End cap R
58	28191617Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
60	28135199	Badge
61	27175254	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
71	25060044	Terminal GND
81	28324162Y	Knob LOUD <B>
	28324177Y	Knob LOUD <S>
82	28324150-1Y	Knob LEV <B>
	28324151	Knob LEV <S>
83	28324163	Knob VOL <B>
	28324182	Knob VOL <S>
85	28324140	Knob POW <B>
	28324184	Knob POW <S>
86	28324170Y	Knob SP A <B>
	28324172Y	Knob SP A <S>

REF.NO.	PART NO.	DESCRIPTION
87	28324171Y	Knob SP B <B>
	28324173Y	Knob SP B <S>
91	27300833	WS-2NS,Clamp
F902	252075	△ 2.5A-SE-EAK,Fuse
F951	252074	△ 2A-SE-EAK,Fuse
P901	253164Y or 253175Y	△ AS-CEE, Power supply cord
Q503,Q504	2202282, 2202283, 2201693, 2201694 or 2201696	2SA1265N-R, 2SA1265N-O, 2SA1491-O, 2SA1491-Y or 2SA1491-P,Power amplifier transistor
Q505,Q506	2202292, 2202293, 2201703, 2201704 or 2201706	2SC3182N-R, 2SC3182N-O, 2SC3855-O, 2SC3855-Y or 2SC3855-P,Power amplifier transistor
T901	2300754Y	△ NPT-1129P,Power transformer
U1	1A331525-1A	NARF-4325-1A,Tuner circuit pc board ass'y
U2	1A331526-1A	NADIS-4326-1A,Display circuit pc board ass'y
U3	1A331527-1A	NAAF-4327-1A,Power amplifier circuit pc board ass'y
U4	1A331528-1A	NASW-4328-1A,Headphone terminal pc board ass'y
U5	1A331529-1	NASW-4329-1,Power switch pc board ass'y
U6	1A331530-1	NAETC-4330-1,Terminal pc board ass'y
U7	1A331531-1A	NAPS-4331-1A,Power supply circuit pc board ass'y
U9	1A331533-1	NAETC-4333-1,AC outlet pc board ass'y
U10	1A331534-1A	NAAF-4334-1A,Tone control circuit pc board ass'y
U11	1A331535-1	NAETC-4335-1,Volume control pc board ass'y
U12	1A331537-1	NAETC-4337-1,Terminal pc board ass'y

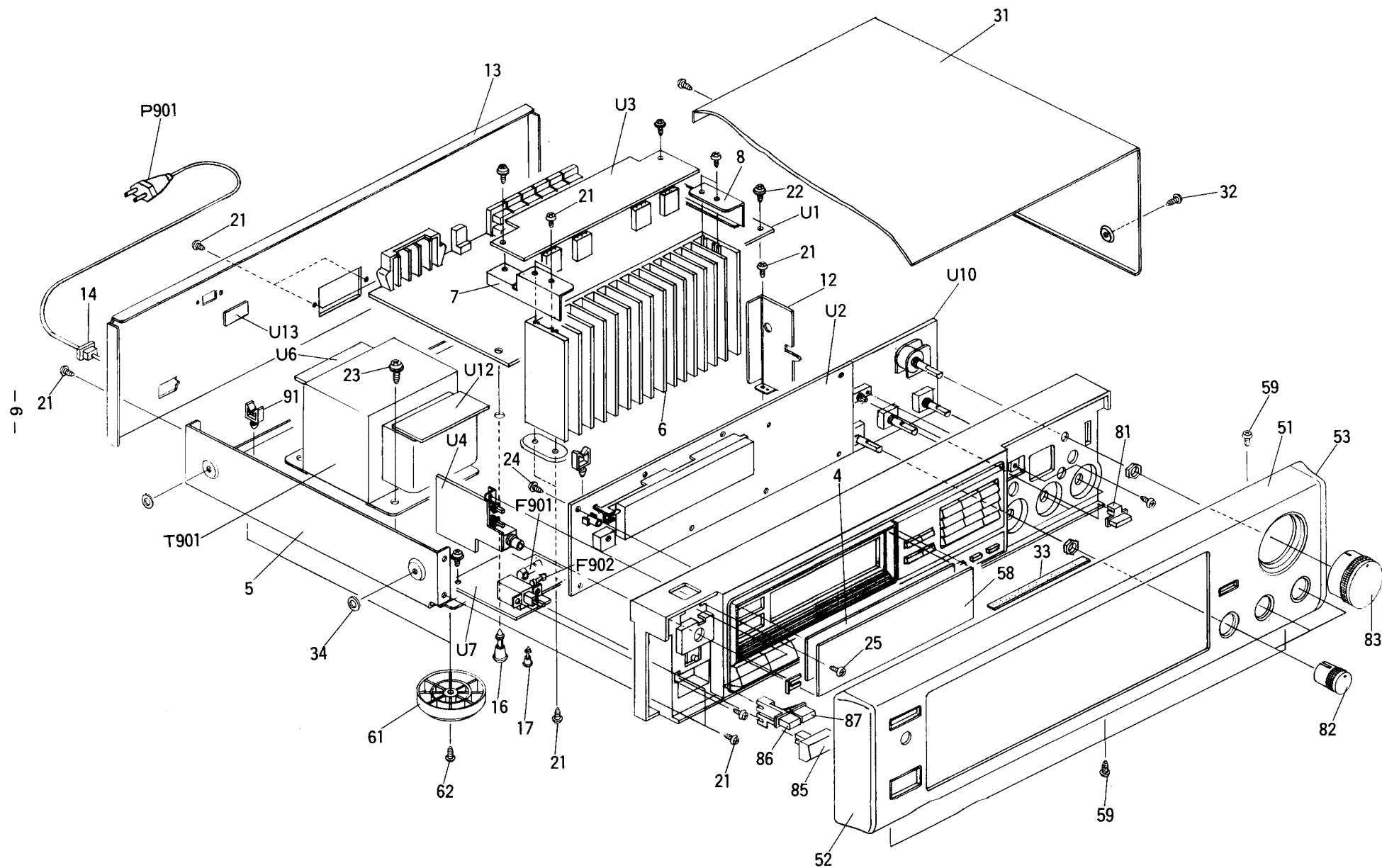
NOTE: <B>:Black model only  
<S>:Silver model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK △ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

# EXPLODED VIEW

## MODEL TX-7900

TX-7900



# PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	27110680Y	Front bracket <B>
	27110681Y	Front bracket <S>
4	28133255Y	Back plate
5	27100228Y	Chassis
6	27160290Y or 27160272AY	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
12	27130643AY	Bracket,shield
13	27121536-2Y	Back panel
14	27300750	△ Bushing
16	27190524	KGLS-14R,Holder
17	27190266	KGLS-12R,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	0.5×180×8,Cushion
34	27270212	Spacer
51	1A337701K	Front panel ass'y <B>
	1A338701K	Front panel ass'y <S>
52	28125226BY	End cap L
53	28125227BY	End cap R
58	28191617Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
60	28135199	Badge
61	27175254	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
71	25060044	Terminal GND
81	28324162Y	Knob LOUD <B>
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	28324151	Knob LEV <S>
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	28324182	Knob VOL <S>
85	28324140	Knob POW <B>
	28324184	Knob POW <S>

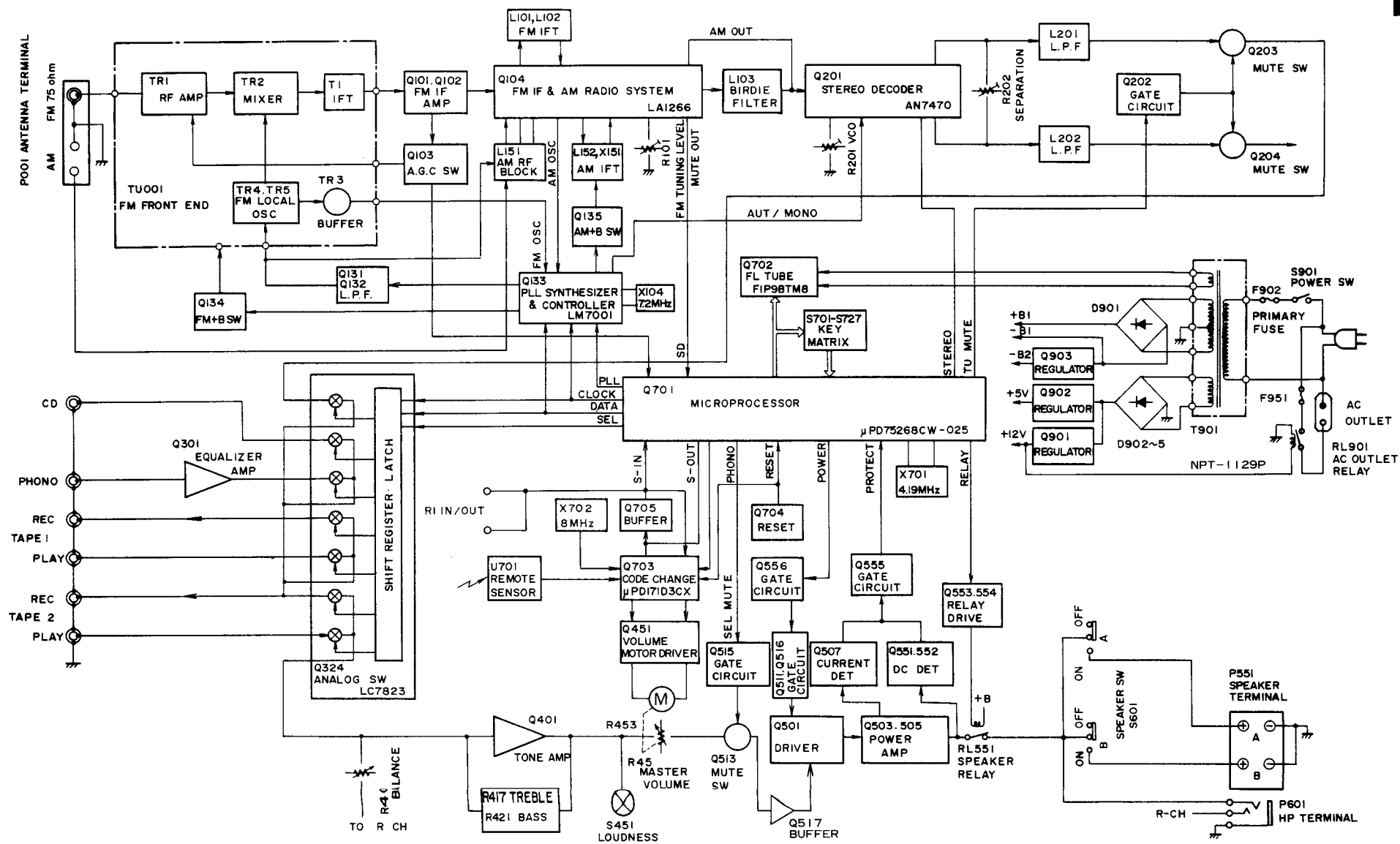
REF.NO.	PART NO.	DESCRIPTION
86	28324170Y	Knob SP A <B>
	28324172Y	Knob SP A <S>
87	28324171Y	Knob SP B <B>
	28324173Y	Knob SP B <S>
91	27300833	WS-2NS,Clamp
F902	252074	△ 2A-SE-EAK,Fuse
P901	253164Y or 253175Y	△ AS-CEE, Power supply cord
Q503,Q504	2202492, 2202493, 2202243, 2202244 or 2202246	2SA1264N-R, 2SA1264N-O, 2SA1694-O, 2SA1694-Y or 2SA1694-P,Power amplifier transistor
Q505,Q506	2202502, 2202503, 2202253, 2202254 or 2202256	2SC3181N-R, 2SC3181N-O, 2SC4467-O, 2SC4467-Y or 2SC4467-P,Power amplifier transistor
T901	2300758Y	△ NPT-1130P,Power transformer
U1	1A335525-2A	NARF-4325-2A,Tuner circuit pc board ass'y
U2	1A335526-2A	NADIS-4326-2A,Display circuit pc board ass'y
U3	1A335527-2A	NAAF-4327-2A,Power amplifier circuit pc board ass'y
U4	1A335528-2A	NASW-4328-2A,Headphone terminal pc board ass'y
U6	1A335530-2	NAETC-4330-2,Terminal pc board ass'y
U7	1A335531-2A	NAPS-4331-2A,Power supply circuit pc board ass'y
U10	1A335536-1A	NAAF-4336-1A,Tone control circuit pc board ass'y
U12	1A335537-2	NAETC-4337-2,Terminal pc board ass'y

NOTE: <B>:Black model only  
<S>:Silver model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK △  
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ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.

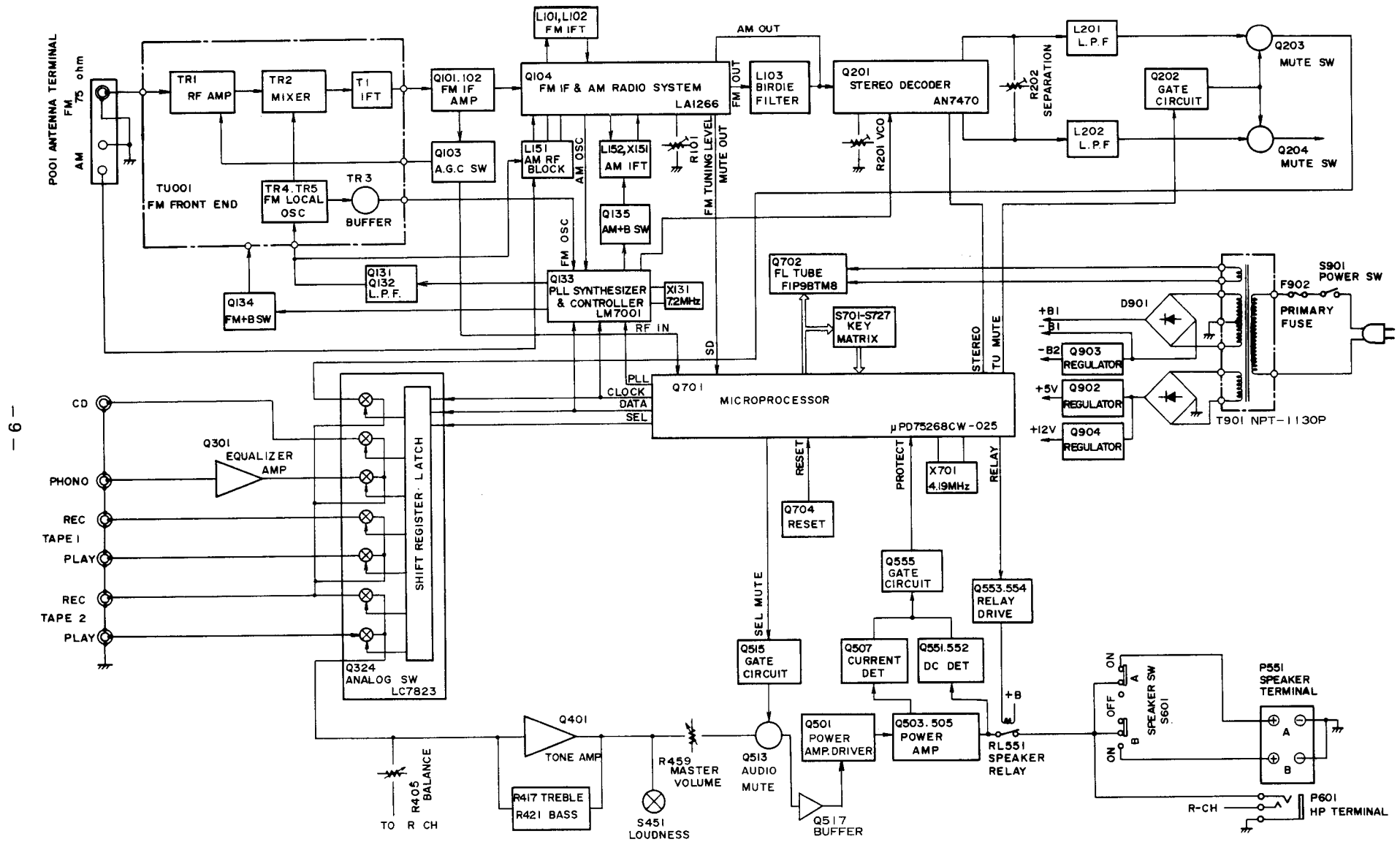
## BLOCK DIAGRAM

MODEL TX-7920



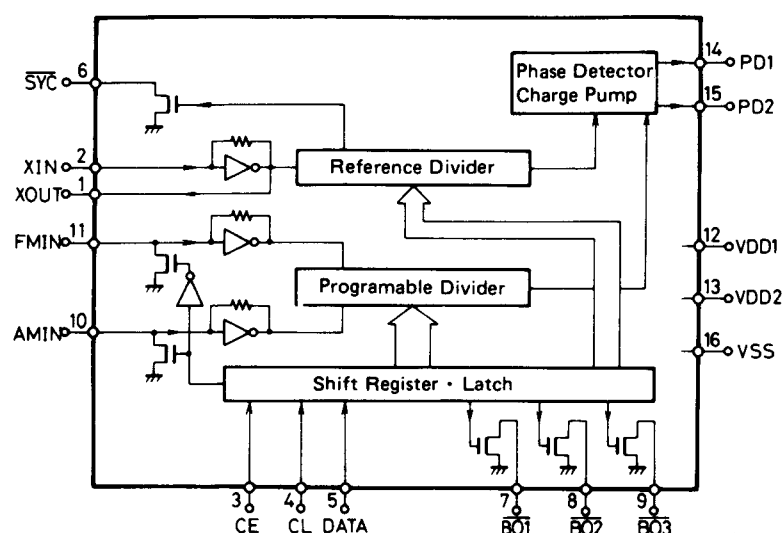


# MODEL TX-7900



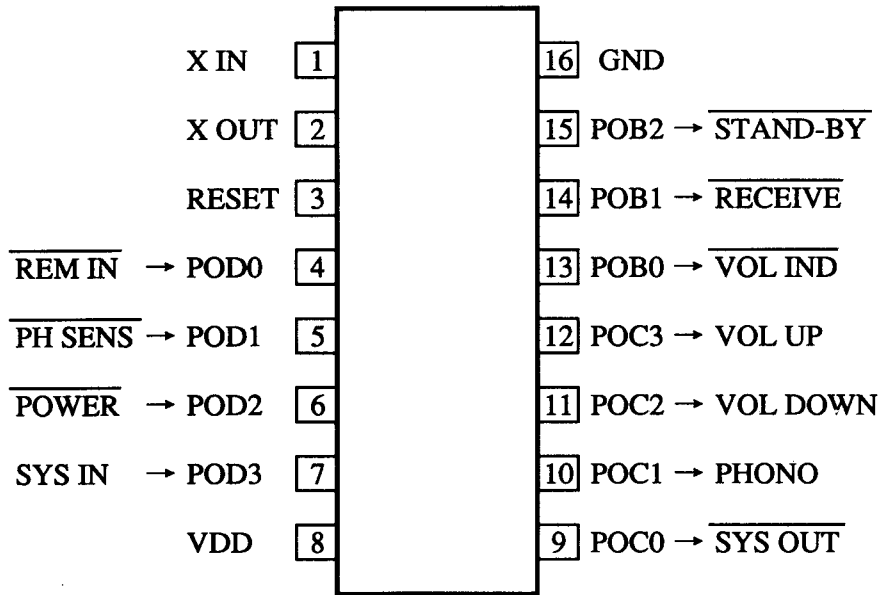
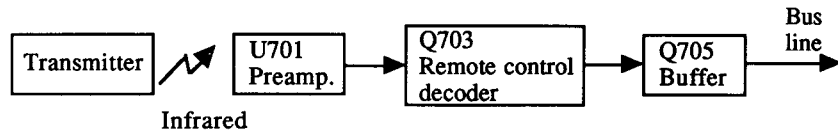
# IC BLOCK DIAGRAM AND DESCRIPTION

## LM7001(PLL synthesizer and controller)



Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of micro processor.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of micro processor.
5	DATA	Serial data input terminal. Connect to the DATA terminal of micro processor.
6	SYN	Not used.
7	AUTO/MONO	Auto/Mono control output terminal. "H" when Auto.
8	BO2	FM control signal output terminal. "L" when FM.
9	BO3	AM control signal output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator terminal.
12	VDD 1	Power supply terminal for back-up.
13	VDD 2	Power supply terminal.
14	PD1	Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided local oscillator frequency is high than the reference frequency. In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters.
15	PD2	
16	Vss	Ground terminal.

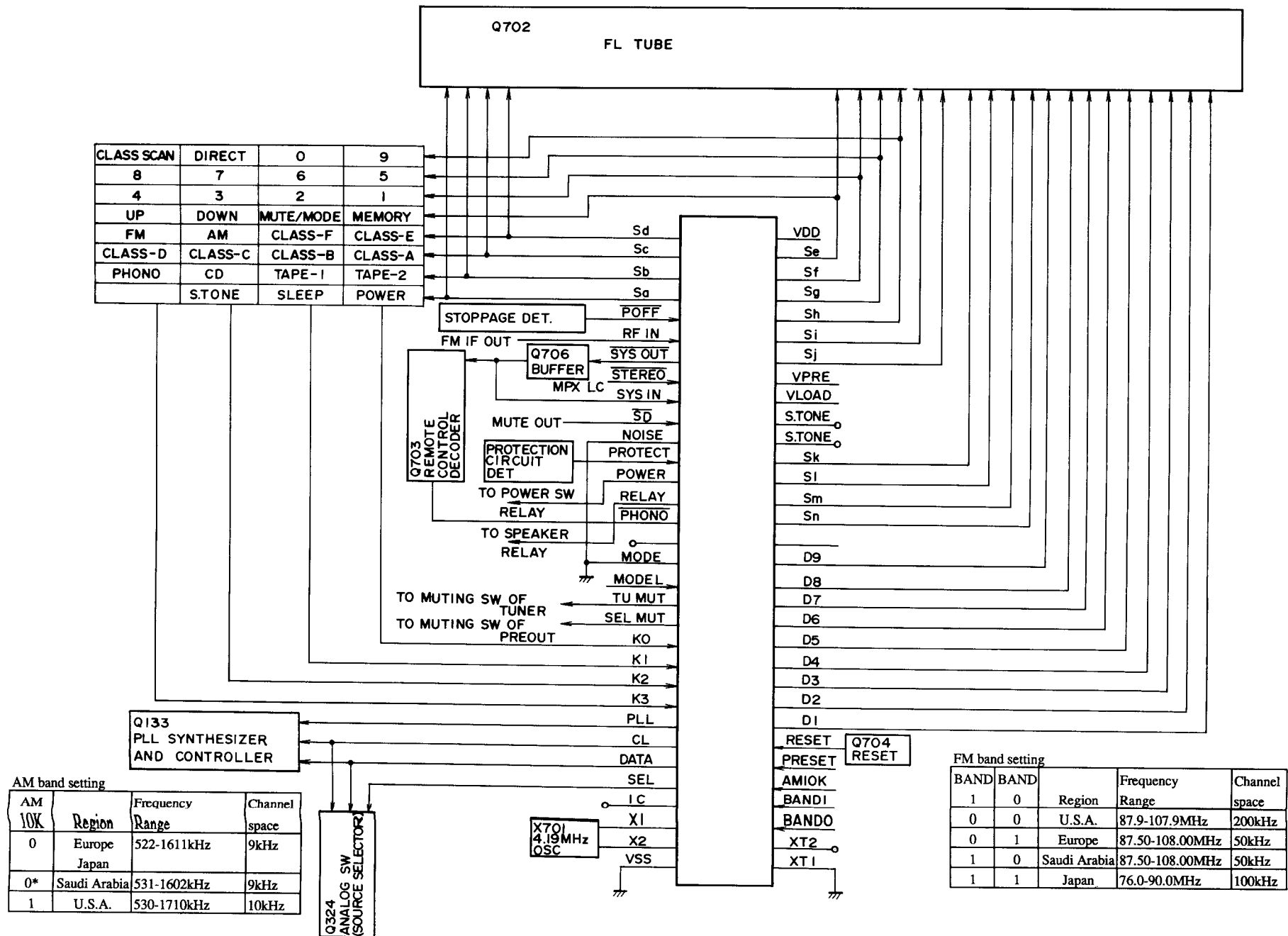
**μPD17103CX-528(Remote control decoder)**  
**MODEL TX-7920**



Pin No.	Symbol	Terminal	Description
1	XIN	OSC	Connect to the 8.00MHz ceramic oscillator.
2	XOUT		
3	RES	RESET	System reset terminal. Active low.
4	POD0	REMOTE IN	Signal input terminal from preamp. for remote control. Active low.
5	POD1	PHONO SENSE	Phono detection input terminal. Active low.
6	POD2	POWER	Stand-by detection input terminal. During low input, only the POWER code is decoded.
7	POD3	SYS IN	System code input terminal.
8	V <sub>DD</sub>	+B	Power supply terminal.
9	POC0	SYS OUT	Output at this terminal are the custom code (16bits) remote control code input to REMOTE IN, data code (8bits), and the serial code (12bits) that has been converted corresponding to the decoded data code (8bits)
10	POC1	PHONO	When the player PLAY/REEJECT is input, a high pulse of 200ms is output.
11	POC2	VOL DOWN	When the volume DOWN code is input, a high pulse of 120ms is output.
12	POC3	VOL UP	When the volume UP code is input, a high pulse of 120ms is output.
13	POB0	VOL IND	During the output of VOLUME UP/DOWN, a pulse ( $\overline{\text{T}}\text{T}\text{T}\text{T}$ = 250ms) is output. (Not used.)
14	POB1	RECEIVE	This is the display output for remote control reception. Output is low when decoded code is being recieved.
15	POB2	STAND-BY	STAND-BY indication terminal.
16	V <sub>SS</sub>	GND	Ground terminal.

μPD75268CW-025(Microprocessor)

TX-7900/TX-7920

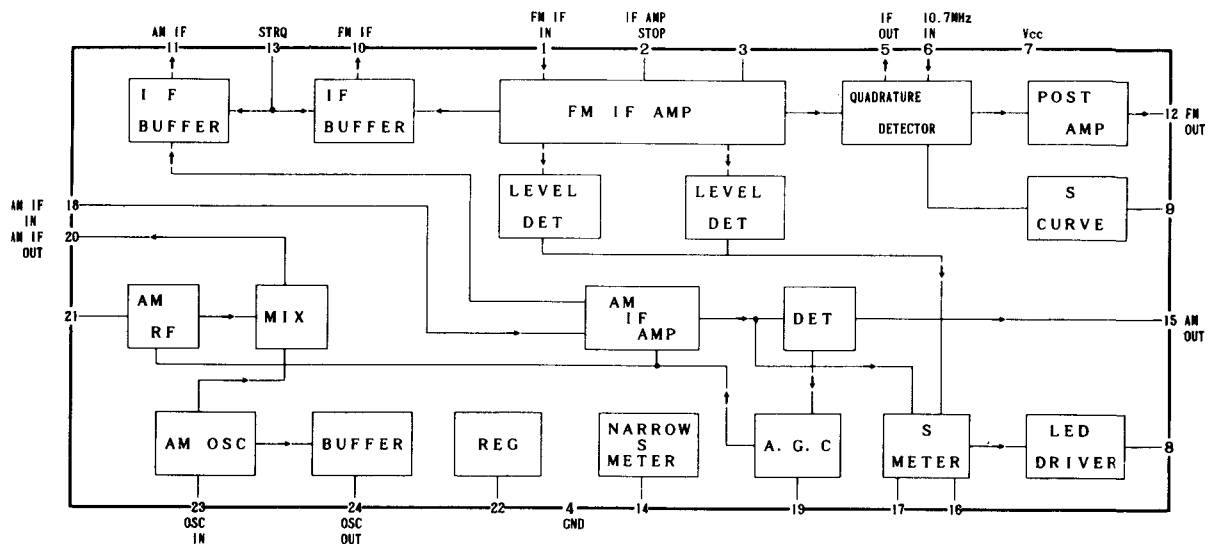


## TERMINAL DESCRIPTION

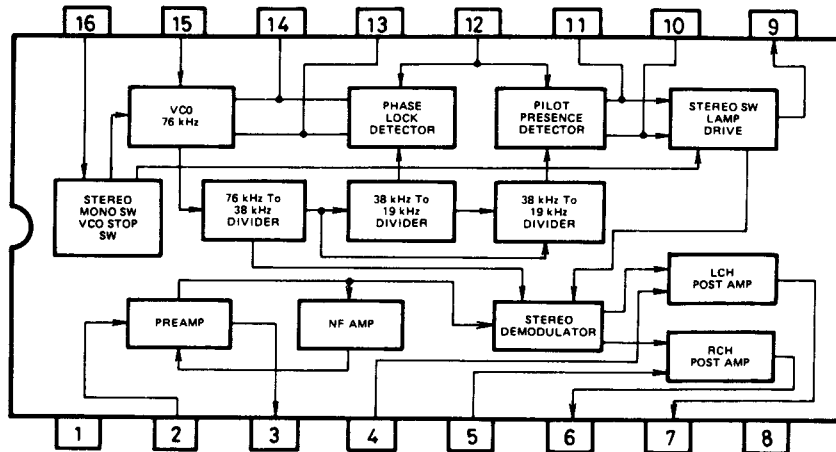
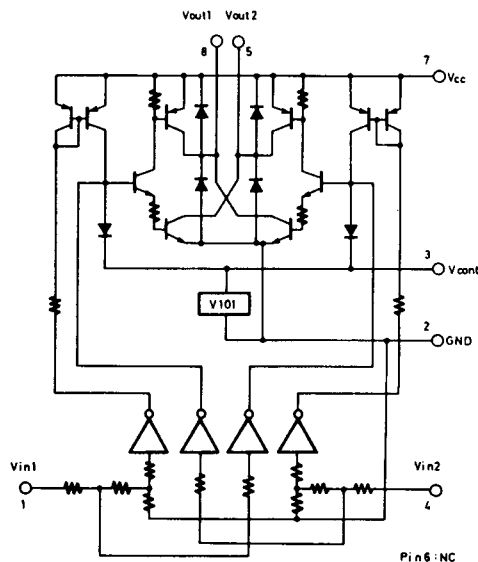
Pin No.	Symbol	Description						
1	Sd	Segment and key scan output terminals. "H" when active.						
2	Sc							
3	Sb							
4	Sa							
5	POFF	This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.						
6	RF IN	RF mode input terminal. <table><tr><td>RF IN</td><td>RF MODE</td></tr><tr><td>L</td><td>LOCAL</td></tr><tr><td>H</td><td>DX</td></tr></table>	RF IN	RF MODE	L	LOCAL	H	DX
RF IN	RF MODE							
L	LOCAL							
H	DX							
7	SYS OUT/ SYS EN	System code output terminal."L"when active. Initializing input terminal when the power turns on.						
8	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.						
9	SYS IN	System code input terminal."H" when active.						
10	SD	Broadcast detection input terminal."L" when active. Control the stop of auto tuning and output TU MUT(#19).						
11	NOISE	Noise detection input terminal.Not used.						
12	PROTECT	Protection circuit operation detection input terminal.						
13	POWER	Power control output terminal.						
14	RELAY	Speaker relay control output terminal.						
15	PHONO	Phono control output terminal.						
16		Not used.						
17	MODE	Initializing input terminal for operation mode setting.						
18	MODEL	Initializing input terminal for model setting of receiver.						
19	TU MUT	Muting output terminal."H" when active.						
20	SEL MUT	Audio muting output terminal.Not used.						
21	K0	Key scan input terminals. "H" when active.						
22	K1							
23	K2							
24	K3							
25	PLL	Connect to the terminal CE of PLL IC (LM7001 Q133).						
26	CL	Connect to the terminal CL of PLL IC and analogue switch.						
27	DATA	Connect to the terminals DATA of PLL IC and analogue switch.						
28	SEL	Analog switch control output terminal. Connect to the terminal SEL of analogue switch(LC7823 Q324)						

Pin No.	Function	Description
29	IC	Internal connected.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	BAND0	Initializing input terminal for region setting of FM band.
36	BAND1	
37	AM 10K	Initializing input terminal for region setting of AM band.
38	PRESET	Initializing input terminal for operation mode setting.
39	RESET	Reset input terminal."L" when active.
40	D1	Digit output terminals."H" when active.
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	
49		Not used.
50	Sn	Segment output terminals."H" when active.
51	Sm	
52	Sl	
53	Sk	
54	S.TONE	SELECTIVE TONE indication output terminal.Not used.
55	S.TONE	SELECTIVE TONE control output terminal.Not used.
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Si	Segment and key scan output terminals. "H" when active.
59	Si	
60	Sh	
61	Sg	
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

## LA1266(FM IF and AM radio system)



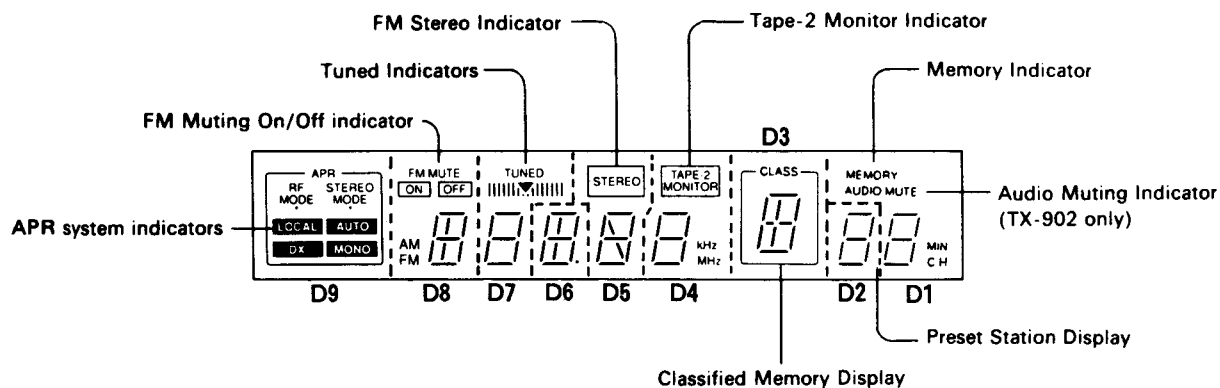
## AN7470(Stereo decoder)

LB1630(Motor driver)  
(MODEL TX-7920)

TRUTH TABLE

IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	OFF	OFF	Wait
L	L	OFF	OFF	Wait

## FIP9BTM8(Fluorescent tube)



Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Electrode	F	F	NP	9G	NP	NP	NP	NP	NP	9G	NP	8G	NP	NP	8G	P(n)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Electrode	7G	7G	P(m)	6G	6G	P(l)	P(k)	5G	P(j)	P(i)	4G	P(h)	NP	4G	P(g)	
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
Electrode	3G	P(f)	P(e)	3G	P(a)	2G	2G	P(b)	1G	P(c)	P(d)	1G	NP	F	F	

Note: F:Filament

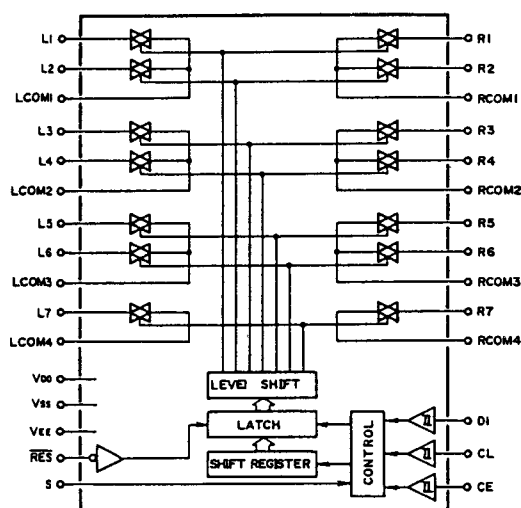
G:Grid

P:Anode

NP:No pin

	D9	D8	D7	D6	D5	D4	D3	D2	D1
Sa	APR	a	a	a	a	a	a	a	a
Sb	STEREO MODE	b	b	b	b	b	b	b	b
Sc	AUTO	c	c	c	c	c	c	c	c
Sd	MONO	d	d	d	d	d	d	d	d
Se	DX	e	e	e	e	e	e	e	e
Sf	LOCAL	f	f	f	f	f	f	f	f
Sg	RF MODE	g	g	g	g	g	g	g	g
Sh					h				
Si		i		i			i		
Sj		FM MUTE	TUNED		STEREO	TAPE-2	CLASS		MEMORY
Sk		ON	▼ (TUNED)				k		SLEEP
Sl		OFF							AUDIO MUTE
Sm		AM				kHz			MIN
Sn		FM				MHz			CH

## LC7823/LC7823N(Analog switch)

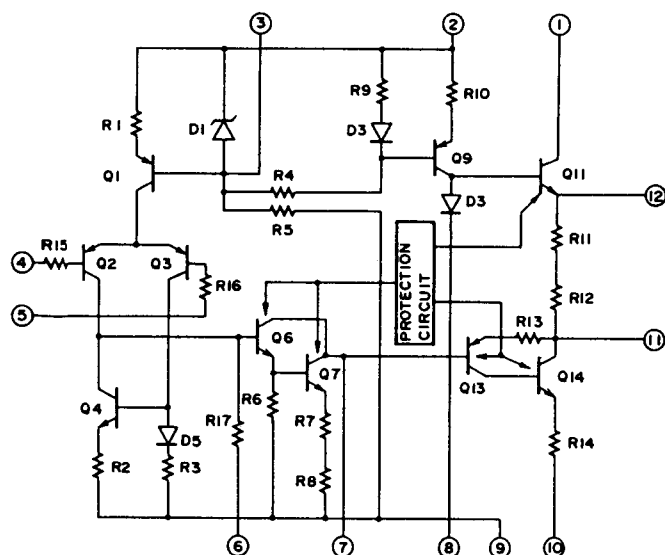


Serial Data Composition

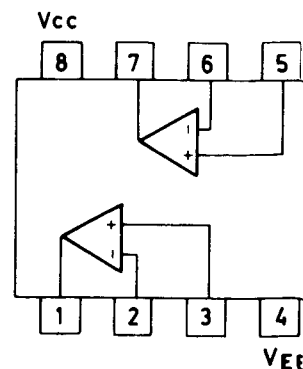
CIRCUIT NO	PART NAME	A0	A1	A2	A3	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Q310	LC7823-N	0	1	1	1	SWITCH CHANGEOVER							
Q312	LC7821-N	1	1	0	1								
Q313	LC7823-N	1	1	1	1								
Q693	LC7822-N	0	0	1	1								
Q694	LC7822-N	1	0	1	1								

ADDRESS

Pin No.	Terminal	Description
1,30	CD	On when the input selector is CD.
2,29	PHONO	On when the input selector is PHONO.
3,28	LCOM1,RCOM1	Common terminal.
4,27	TAPE-1 REC	Off when the input selector is TAPE-1.
5,26	TAPE-1 PB	On when the input selector is TAPE-1.
6,25	LCOM2,RCOM2	Common terminal.
7,24	TAPE-2 REC	Off when the input selector is TAPE-2.
8,23	TAPE-2 PB	On when the input selector is TAPE-2.
9,22	LCOM3,RCOM3	Common terminal.
10,21	TUNER	On when the input selector is TUNER.
11,20	LCOM4,RCOM4	Common terminal.
12	VEE	Negative power supply terminal.(-15V)
13	CE	Chip enable terminal.Connect to the terminal FUNC of the microprocessor.
14	DI	Serial data input terminal.Connect to the terminal DATA of the microprocessor.
15	CL	Serial clock terminal.Connect to the terminal CL of the microprocessor.
16	Vss	Ground terminal.
17	S	Select terminal.
18	RES	Reset terminal.
19	VDD	Power supply terminal.(+5V)

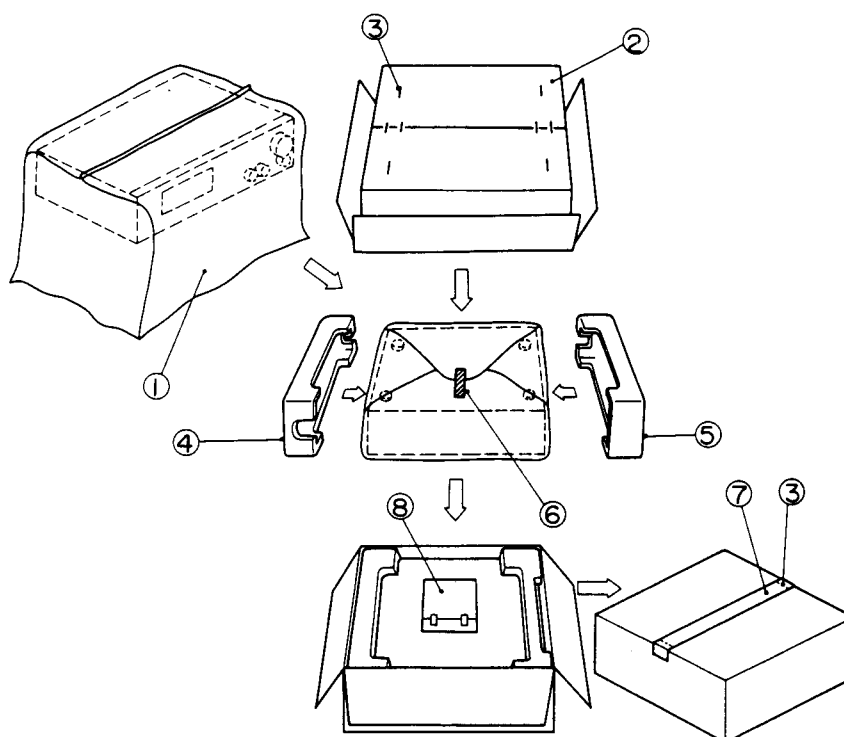
 $\mu$ PC1225H(Power amplifier driver)

## NJM4558D-X(Operation amplifier)





## PACKING VIEW



### TX-7920

REF.NO.	PART NO.	DESCIRPTION
1	29052331Y	Master carton box <B>
	29052332Y	Master carton box <S>
2	29091440AY	Pad L
3	29091441AY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Sealing hook
6	29110071	Damplon tape
7	261504	Adhesive tape
8	Accessory bag ass'y	
	29341685Y	Instruction manual
	29100097	350×250,Styrene bag
	292112Y	FM antenna
	232140	NMA-3057,AM loop antenna
	29365020E	Warranty card
	29100094A	Styrene bag for warranty card
	3010165Y	UM-3,Two batteries
	24140223Y	RC-223S,Remote control unit
	2010200	Cord RI

### TX-7900

REF.NO.	PART NO.	DESCIRPTION
1	29052334Y	Master carton box <B>
	29052335Y	Master carton box <S>
2	29091440AY	Pad L
3	29091441AY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Sealing hook
6	29110071	Damplon tape
7	261504	Adhesive tape
8	Accessory bag ass'y	
	29341685Y	Instruction manual
	29100097	350×250,Styrene bag
	292112Y	FM antenna
	232140	NMA-3057,AM loop antenna
	29365020E	Warranty card
	29100094A	Styrene bag for warranty card

NOTE: <B>:Black model only

<S>:Silver model only

## ADJUSTMENT PROCEDURES

### Preparation

#### 1.Input

FM mono:1kHz,75kHz devi.,60dB/ $\mu$  V

FM stereo:1kHz,75kHz devi.,60dB/ $\mu$  V

Pilot signal 19kHz 7.5kHz devi.

AM:400Hz 30% mod.

#### 2.Outputs

Connect the non-inductive type resistors of 8 ohms to the speaker terminals A unless otherwise noted.

#### 3.Standard Knob Position

VOLUME.....Maximum

BASS/TREBLE/BALANCE.....Center

MUTING/LOUDNESS.....Off

INPUT SELECTOR.....CD

SPEAKERS.....A

### Confirming Operation

#### 1.Protection circuit

##### a.Speaker relay

The speaker relay turns on after the power switch turned on for 5 minutes.

The speaker relay turns off immediately after the power switch turns off.

##### b. Over-voltage confirmation

The speaker relay is off immediately after DC voltage  $\pm 6V$  is applied to the terminal CD.

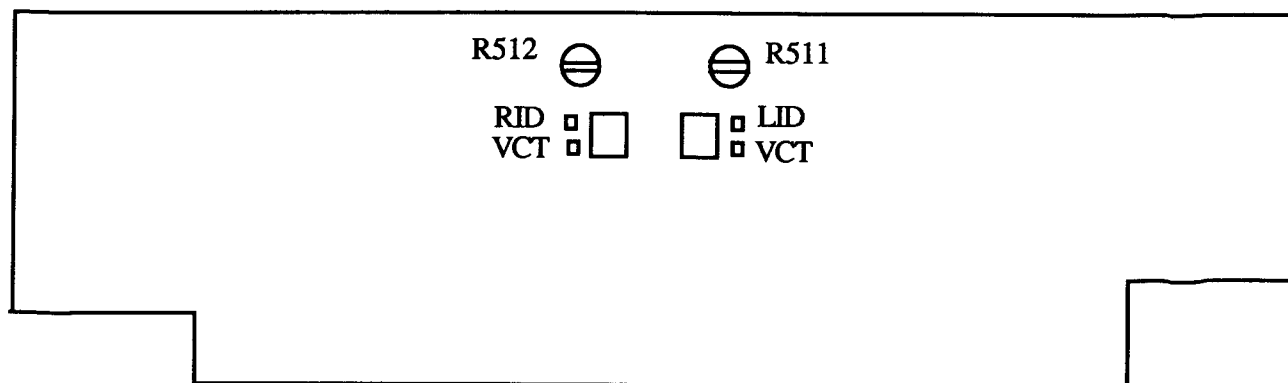
### Amplifier section

#### Idling Current Adjustment

Connect the DC voltmeter to the terminals LID(RID) and CT on the power amplifier pc board.

Adjust the semi-fixed resistor R511(R512) so that the indication of voltmeter is  $5 \pm 0.5mV$ .

Note:( ):Right channel



POWER AMPLIFIER PC BOARD

SOLDERING SIDE

## FM section

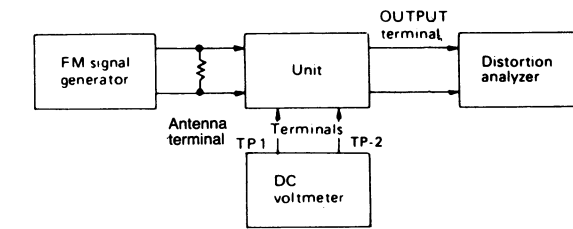
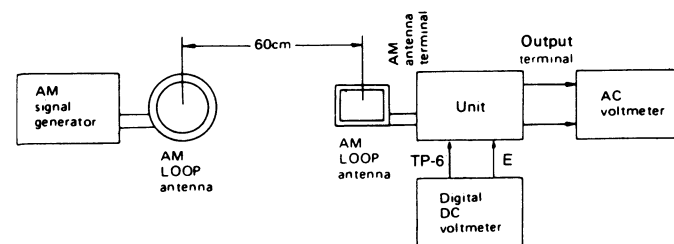
Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuned frequency	Output indicator	Adjustment point	Adjust for	Remarks
I F	1	Fig. 1	99.1MHz 1kHz, 75kHz devi. 65dBf(60dB)	—	99.1MHz	DC voltmeter	L101	$0 \pm 20\text{mV}$	Set the FM mode switch to MONO. Repeat the steps 1 and 2 until no further adjustment is necessary.
	2					Distortion analyzer	L102	Minimum	
V C O		Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dBf(60dB)	—	99.1MHz	Frequency counter	R201	$19\text{kHz} \pm 10\text{Hz}$	Set the FM mode switch to AUTO.
Stereo distortion		Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	L+R 1kHz 67.5kHz devi.	99.1MHz	Distortion analyzer	IF on front end	Minimum	
Stereo separation	1	Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	Lch. 1kHz	99.1MHz	Rch. AC voltmeter	R202	Minimum	Maximum and same separation
	2			Rch. 1kHz		Lch. AC voltmeter		Minimum	
Tuned indicator level	1	Fig. 3	99.1MHz 1kHz, 75kHz devi. 17.2dBf(12dB)	—	99.1MHz	TUNED indicator	R101	Light on	
	2		99.1MHz 1kHz, 75kHz devi. 16.2dBf(11dB)	—				Light off	

## AM section

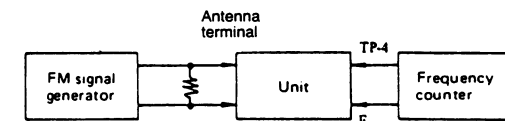
Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for
1	—	522kHz	Digital DC voltmeter	OSC coil on RF block (L151)	$1.5\text{V} \pm 0.1\text{V}$
2	603kHz, 60dB/m 400Hz 30% mod.	603kHz	A C voltmeter	RF coil on RF block (L151)	Maximum
3	990kHz, 60dB/m 400Hz 30% mod.	990kHz	A C voltmeter	L152	Maximum

## Reference specifications

Tuned voltage	AM	522kHz	$1.5 \pm 0.4\text{V}$
(Connet Digital		1611kHz	$7.5 \pm 0.5\text{V}$
DC voltmeter to FM		87.50MHz	$2.0 \pm 0.5\text{V}$
test point TP-6)		108.0MHz	$7.5 \pm 0.5\text{V}$

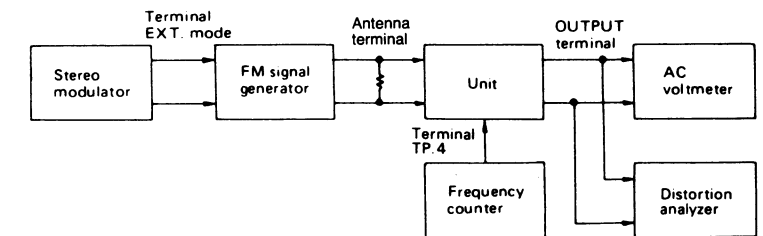
Muting width  $35 \pm 10\text{kHz}$ Muting level FM  $12 \pm 3\text{dB}$ Auto stop level AM Less than  $68\text{dB/m}$ Stereo indicator level FM Less than  $20\text{dB}\mu$  $14 \pm 4\text{dB}\mu$ 

(Fig. 1)

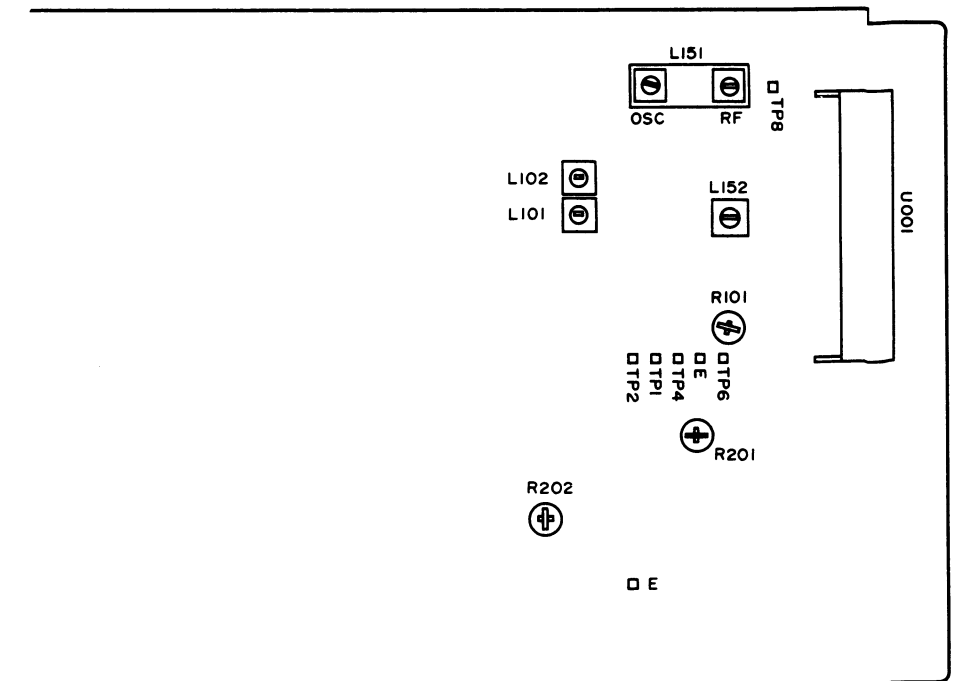


Use the high impedance probe. (10:1)

(Fig. 2)

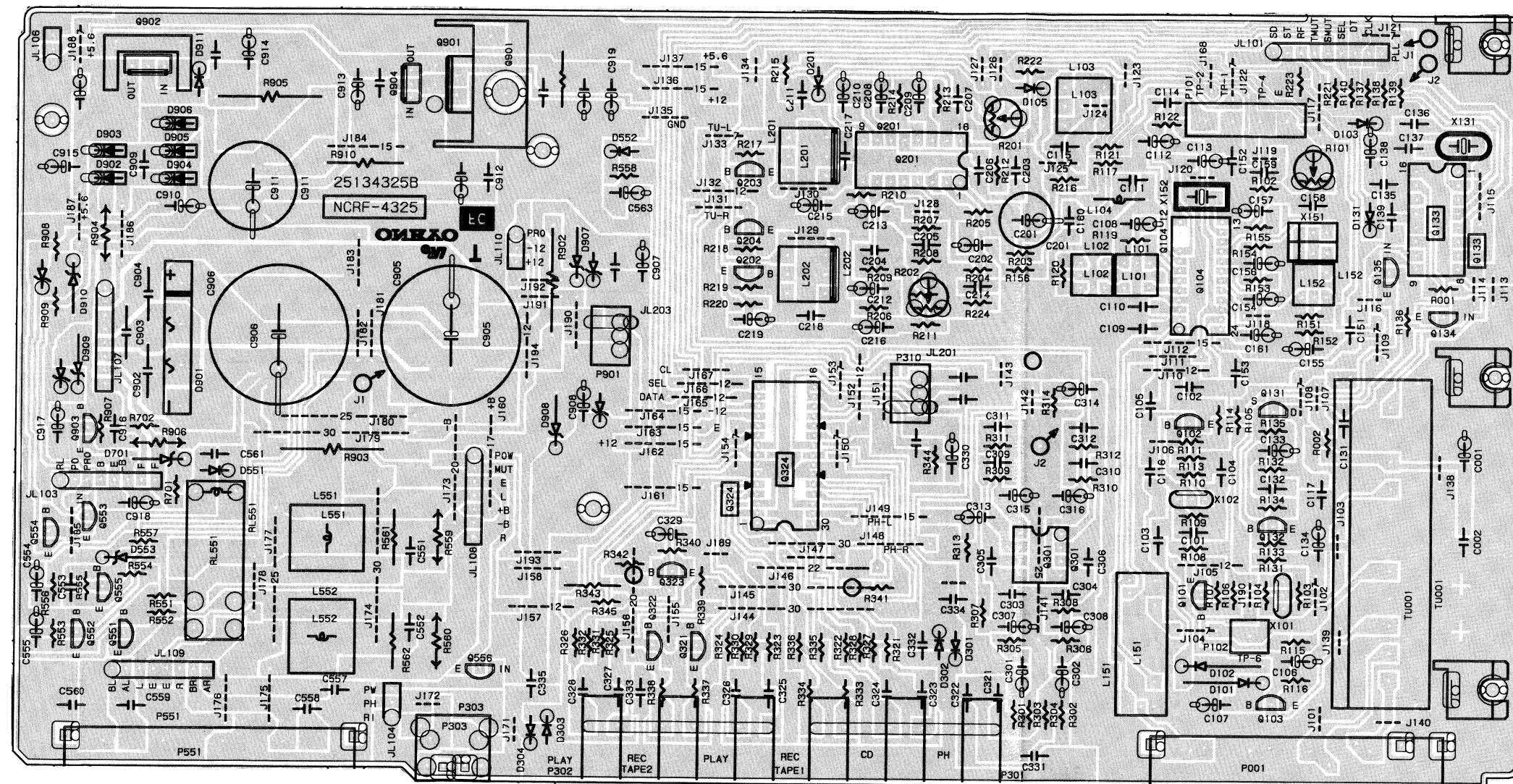


(Fig.3)

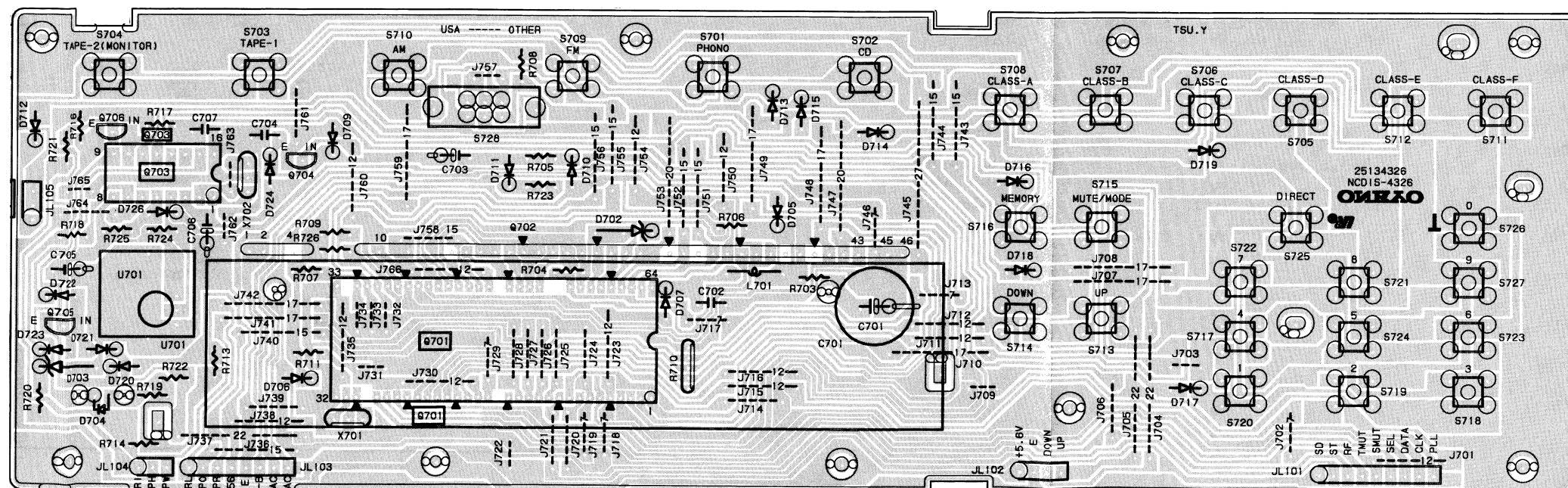


Adjustment point.

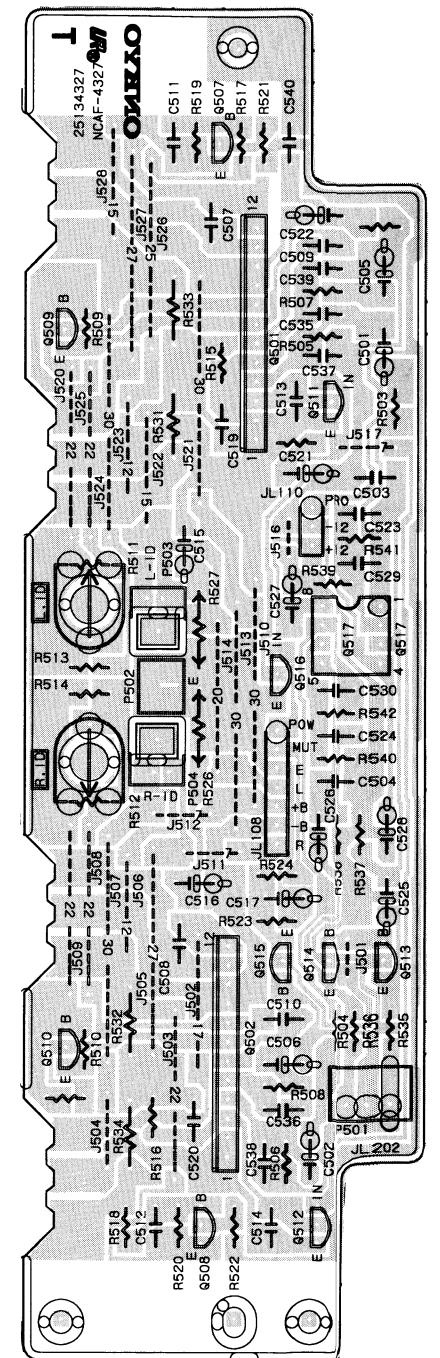
## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



TUNER CIRCUIT PC BOAS



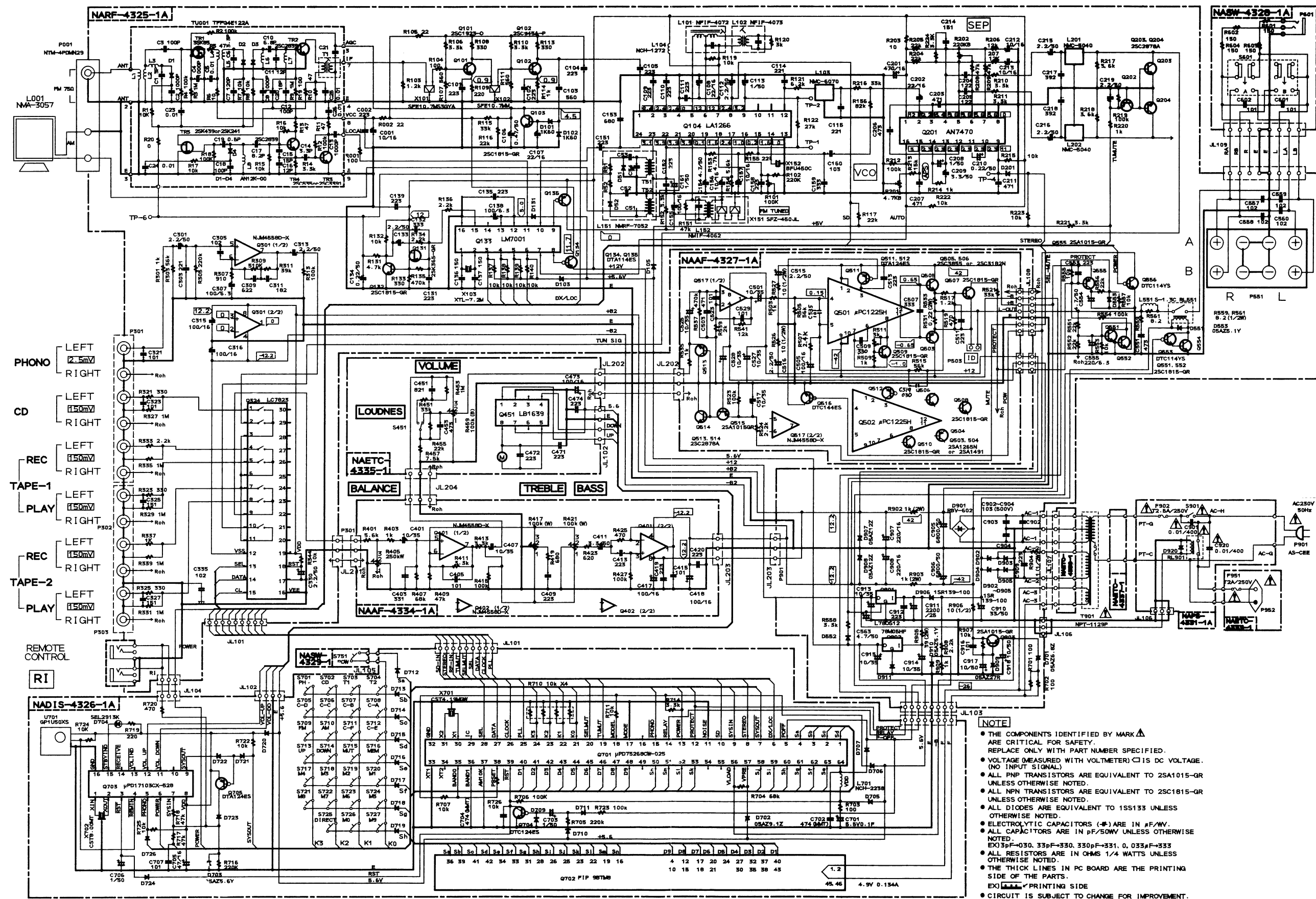
DISPLAY CIRCUIT PC BOARD

POWER AMPLIFIER  
CIRCUIT PC BOARD



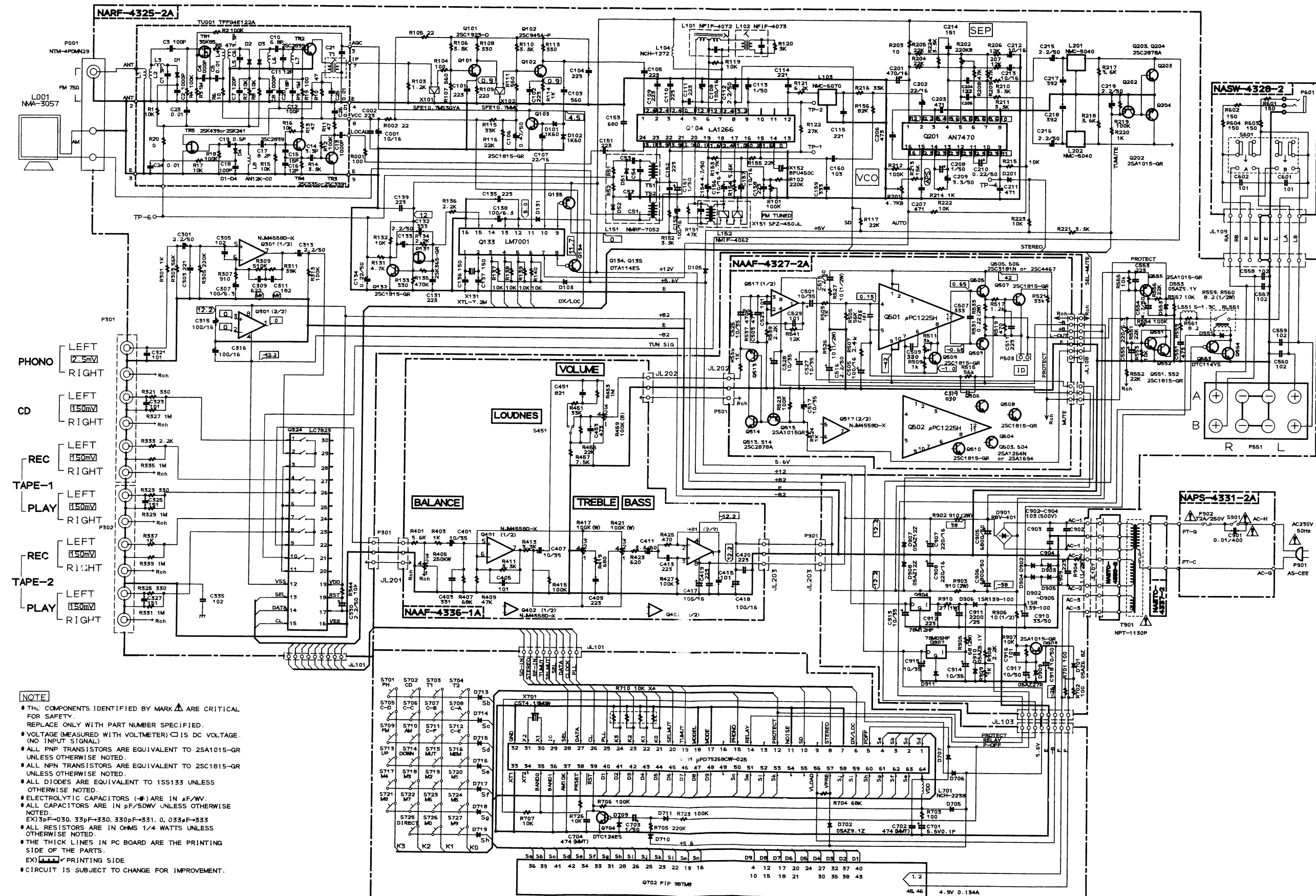
## SCHEMATIC DIAGRAM

### MODEL TX-7920

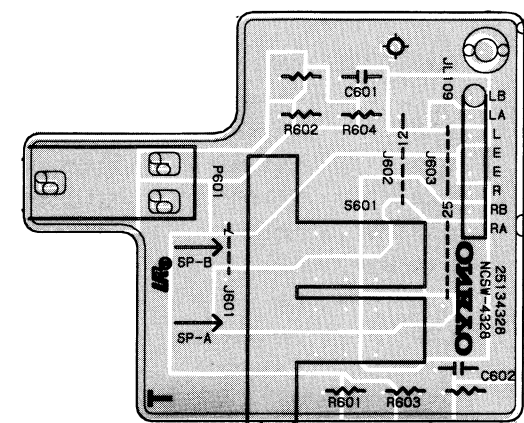


# SCHEMATIC DIAGRAM

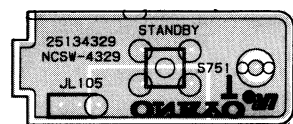
## MODEL TX-7900



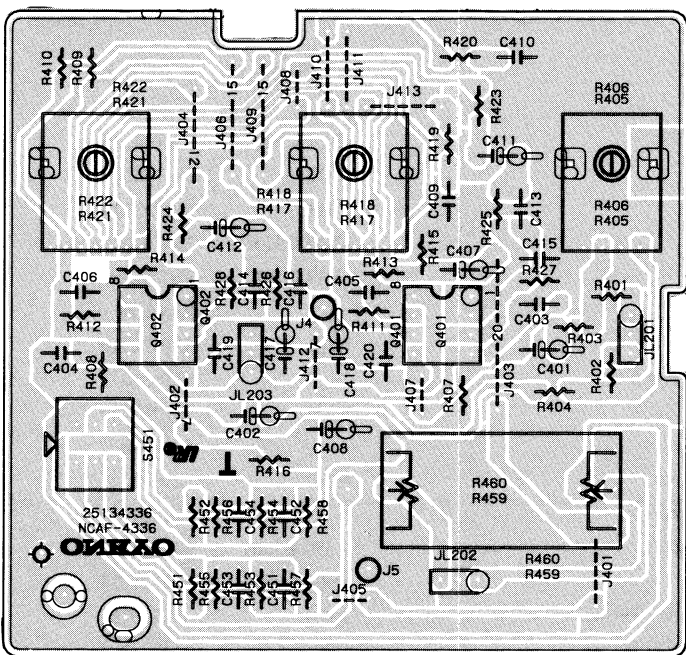
## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



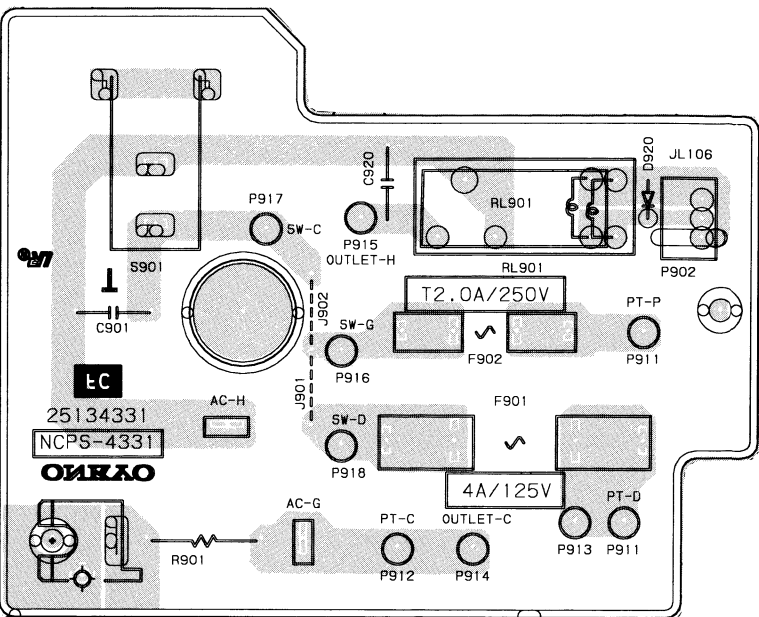
## HEADPHONE TERMINAL PC BOARD



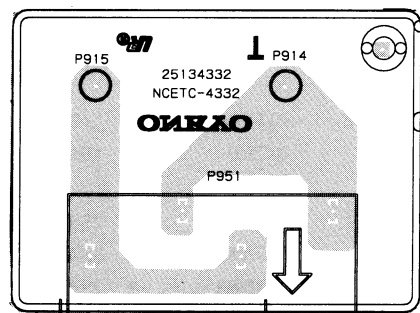
## POWER SWITCH PC BOARD (Only Model TX-7920)



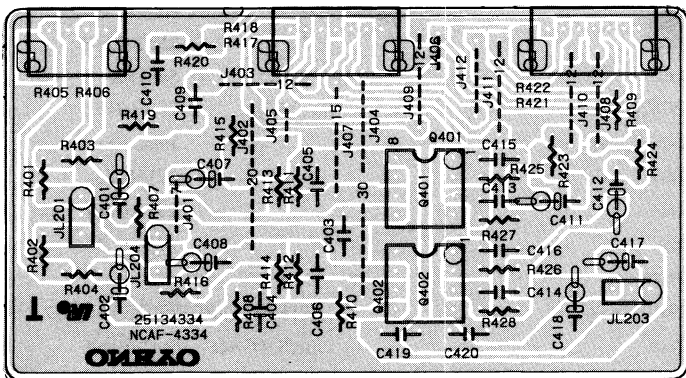
## TONE CONTROL CIRCUIT PC BOARD (Only Model TX-7900)



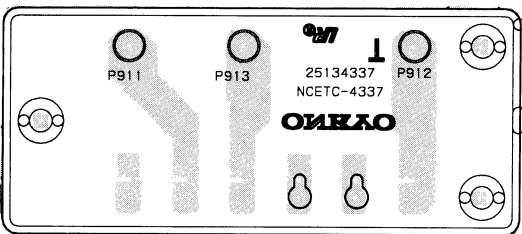
## POWER SUPPLY CIRCUIT PC BOARD



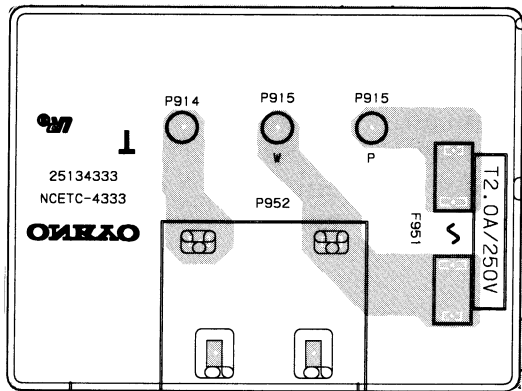
## AC OUTLET PC BOARD



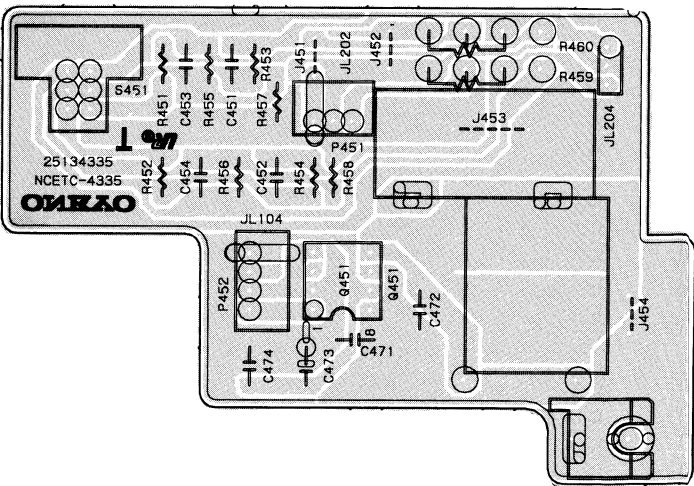
## TONE CONTROL CIRCUIT PC BOARD (Only Model TX-7920)



## TERMINAL PC BOARD



## AC OUTLET PC BOARD



## VOLUME CONTROL PC BOARD (Only Model TX-7920)

## TUNER CIRCUIT PC BOARD (NARF-4325-1A)

### POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-4327-1A)



## POWER SUPPLY CIRCUIT PC BOARD(NAPS-4042-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C501,C502	354761009	10 $\mu$ F,35V,Elect.
C505,C506	354741019	100 $\mu$ F,16V,Elect.
C507,C508	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
C515,C516	354780229	2.2 $\mu$ F,50V,Elect.
C517	353761009	10 $\mu$ F,35V,Elect.
C525-C528	354761009	10 $\mu$ F,35V,Elect.
Resistors		
R511,R512	5215061	N08HR3KBC,Semi-fixed
R526,R527	442521004	10ohm,1/2W,Metal oxide film
R531-R534	4500005	0.22ohm,2W,Metal plate
Radiators		
	27160306Y	
Plugs		
P503,P504	25055495	NPLG-2P470

## HEADPHONE TERMINAL PC BOARD(NASW-4328-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Speaker switch
P601	25045255	YKB21-5009,Headphone terminal

## POWER SWITCH PC BOARD (NASW-4329-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S751	25035548	$\Delta$ NPS-111-S510,Push switch

## POWER SUPPLY CIRCUIT PC BOARD(NAPS-4331-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
D920	223163	1SS133,Diode
S901	25035550	$\Delta$ NPS-111-L512P,Push switch
RL901	25065248	$\Delta$ NRL-1P15A-DC12-29,Relay
C901,C920	3500065A	$\Delta$ DE7150FZ103PAC400V/125V IS capacitors
P901	25050267	NSCT-3P95,Socket
F902	252075	$\Delta$ 2.5A-SE-EAK,Fuse
F902a	25050065	$\Delta$ YSH-403T,Fuseholder
	29360405	T2.5A,Fuse rating label

## AC OUTLET PC BOARD(NAETC-4333-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
F951	252075	$\Delta$ 2.5A-SE-EAK,Fuse
F951a	25050065	$\Delta$ YSH403T,Fuseholders
P952	25050410	$\Delta$ NSCT-2P235,AC outlet

## TONE CONTROL CIRCUIT PC BOARD (NAAF-4334-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q401,Q402	222502	NJM4558D-X
Capacitors		
C401,C402	354761009	10 $\mu$ F,35V,Elect.
C407,C408	354761009	10 $\mu$ F,35V,Elect.
C409,C410	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C411,C412	354780339	3.3 $\mu$ F,50V,Elect.
C413,C414	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C417,C418	354741019	100 $\mu$ F,16V,Elect.
Resistors		
R405,R406	5104225	N11RGLC250KWT22Z,Balance
R417,R421	5104230	N14RLC100KWT22Z,Tone
R418,R422		

## VOLUME CONTROL PC BOARD(NAETC-4335-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	22240322	LB1639,IC
C453,C454	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic capacitors
C473	354741019	100 $\mu$ F,16V,Elect. capacitor
R459,R460	5104243	N16RGM100KBT25F, Volume,Variable resistor
P451	25050267	NSCT-3P95,Socket
P452	25050268	NSCT-4P96,Socket
S451	25035609	NPS-122-L571,Switch

CAUTION:Replacement for transistor of mark \*,if necessary,  
must be made from the same beta group (H FE ) as  
the original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$   
ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.

# PRINTED CIRCUIT BOARD-PARTS LIST

## MODEL TX-7900

### TUNER CIRCUIT PC BOARD (NARF-4325-2A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end			Ceramic filters	
TU001	240085	TFFG4E122A	X101	3010081	SFE10.7MS3GYA
	ICs		X102	3010137	SFE10.7MMK
Q104	22240039	LA1266	X151	3010123	SFZ450JL
Q133	22240090	LM7001	X152	3010076	BFU450C
Q201	22240242	AN7470		Crystal	
Q301	222502	NJM4558D-X	X131	3010158	XTL-7.2M
Q324	22240158 or	LC7823 or		Relay	
	22240339	LC7823N	RL551	25065339	NRL-2P5ADC24-046
Q902	222780055	78M05HF		Capacitors	
Q905	222780125	78M12HF	C001	354761009	10 $\mu$ F, 35V, Elect.
	Transistors		C106	354784799	0.47 $\mu$ F, 50V, Elect.
Q101	2211723	2SC1923-O	C107	354742209	22 $\mu$ F, 16V, Elect.
Q102	2210746	2SC945A-P	C108	354741019	100 $\mu$ F, 16V, Elect.
Q103, Q132	2211255	2SC1815-GR	C112, C133	354780229	2.2 $\mu$ F, 50V, Elect.
Q131	2212445	2SK365-GR	C113	354780109	1 $\mu$ F, 50V, Elect.
Q134, Q135	2213510	DTA114ES	C131	374722234	0.022 $\mu$ F $\pm$ 5%, 50V, Plastic
Q202, Q555	2211455	2SA1015-GR	C132, C159	374723334	0.033 $\mu$ F $\pm$ 5%, 50V, Plastic
Q203, Q204	2212285	2SC2878-A	C134, C210	353782299	0.22 $\mu$ F, 50V, Elect.
Q551, Q552	2211255	2SC1815-GR	C138	354721019	100 $\mu$ F, 6.3V, Elect.
Q553	221281	DTC114YS	C154, C554	354780479	4.7 $\mu$ F, 50V, Elect.
Q554	2211255	2SC1815-GR	C155	354741019	100 $\mu$ F, 16V, Elect.
Q903	2211455	2SA1015-GR	C156, C157	354761009	10 $\mu$ F, 35V, Elect.
	Diodes		C160	374721034	0.01 $\mu$ F $\pm$ 5%, 50V, Plastic
D101, D102	223132	1K60	C161, C208	354780109	1 $\mu$ F, 50V, Elect.
D103, D105	223163	1SS133	C201	354744719	470 $\mu$ F, 16V, Elect.
D131, D201	223163	1SS133	C202	354742209	22 $\mu$ F, 16V, Elect.
D551	223163	1SS133	C204, C205	374721224	1200pF $\pm$ 5%, 50V, Plastic
D553	224150512	05AZ5.1Y	C206	374724734	0.047 $\mu$ F $\pm$ 5%, 50V, Plastic
D701	224150683	05AZ6.8Z	C207	370134714	470pF $\pm$ 5%, 100V, Plastic
D901	22380023	RBV401	C209	354780339	3.3 $\mu$ F, 50V, Elect.
D902-D906	22380032	1SR139-100	C212, C213	354761009	10 $\mu$ F, 35V, Elect.
D907, D908	224151203	05AZ12Z	C215, C216	354780229	2.2 $\mu$ F, 50V, Elect.
D909	224152704	05AZ27R	C217, C218	374723924	3900pF $\pm$ 5%, 50V, Plastic
D910	224150512	05AZ5.1Y	C219	354780229	2.2 $\mu$ F, 50V, Elect.
D911	223163	1SS133	C301, C302	354780229	2.2 $\mu$ F, 50V, Elect.
	Coils		C307, C308	354721019	100 $\mu$ F, 6.3V, Elect.
L103	233383	NMC-6070	C309, C310	374726224	6200pF $\pm$ 5%, 50V, Plastic
L104	233409M022	NCH-1272	C311, C312	374721824	1800pF $\pm$ 5%, 50V, Plastic
L201, L202	233294	NMC-5040	C313, C314	354780229	2.2 $\mu$ F, 50V, Elect.
L551, L552	231176	S-1.3C	C315, C316	354741019	100 $\mu$ F, 16V, Elect.
	Transformers		C330	354780229	2.2 $\mu$ F, 50V, Elect.
L101	233401	NFIF-4072	C551, C552	374724734	0.047 $\mu$ F $\pm$ 5%, 50V, Plastic
L102	233402	NFIF-4073	C555	354722219	220 $\mu$ F, 6.3V, Elect.
L152	232139	NMIF-4062	C905, C906	3504207	6800 $\mu$ F, 50V, Elect.
	RF block				
L151	232152	NMRF-7052			

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C907,C908	354742219	220 $\mu$ F,16V,Elect.
C910	354783309	33 $\mu$ F,50V,Elect.
C911	354752229	2200 $\mu$ F,25V,Elect.
C913-C915	354761009	10 $\mu$ F,35V,Elect.
C917,C918	354781009	10 $\mu$ F,50V,Elect.
Resistors		
R101	5210221 or 5210070	N06HR100KBD Semi-fixed
R201	5210216 or 5210062	N06HR5KBD or N06HR4.7KBD ,Semi-fixed
R202	5210222 or 5210072	N06HR200KBD or N06HR220KBD,Semi-fixed
R559,R560	442520824	8.2ohm,1/2W,Metal oxide film
R902,R903	441729114	910ohm,2W,Metal oxide film
R904	442520104	1ohm,1/2W,Metal oxide film
R905	441726804	68ohm,2W,Metal oxide film
R906	442521004	10ohm,1/2W,Metal oxide film
R910	441622704	27ohm,1W,Metal oxide film
Terminals		
P001	25060117Y	NTM-2PDML051,Antenna
P101	25060064	4P-5
P102	25060061	1P-5
P301,P302	25045323Y	NPJ-6PDBL180
P551	25060158Y	NTM-8PDML084,Speaker
Sockets		
P310,P901	25050267	NSCT-3P95

## DISPLAY CIRCUIT PC BOARD (NADIS-4326-2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q701	22240406Y	$\mu$ PD75268CW-025
FL tube		
Q702	212093Y	FIP9BTM8
Transistor		
Q704	221282	DTC144ES
Ceramic oscillator		
X701	3010163	CST4.19MGW
Diodes		
D702	224150913	05AZ9.1Z
D705-D707	223163	1SS133
D709-D711	223163	1SS133
D713-D720	223163	1SS133
Coil		
L701	233400M220 or 233409K220	NCH-2238 or NCH-1284

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C701	3000057	0.1F,5.5V,Super
C702,C704	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
C703	353780229	2.2 $\mu$ F,50V,Elect.
Resistor		
R710	49163103404	10kohm $\times$ 4,1/10W,Array
Switches		
S701-S727	25035548	NPS-111-S510
Holder		
	27190810Y	FL

## POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-4327-2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q501,Q502	22240108	$\mu$ PC1225H
Q517	222502	NJM4558D-X
Transistors		
Q503,Q504	2202492,	* 2SA1264N-R,
	2202493,	* 2SA1264N-O,
	2202243	* 2SA1694-O,
	2202244 or	* 2SA1694-Y or
	2202246	* 2SA1694-P
Q505,Q506	2202502,	* 2SC3181N-R,
	2202503,	* 2SC3181N-O,
	2202253	* 2SC4467-O,
	2202254 or	* 2SC4467-Y or
	2202256	* 2SC4467-P
Q507-Q510	2211255	2SC1815-GR
Q513,Q514	2212285	2SC2878-A
Q515	2211455	2SA1015-GR
Capacitors		
C501,C502	354761009	10 $\mu$ F,35V,Elect.
C505,C506	354741019	100 $\mu$ F,16V,Elect.
C507,C508	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
C515,C516	354780229	2.2 $\mu$ F,50V,Elect.
C517	353761009	10 $\mu$ F,35V,Elect.
C525-C528	354761009	10 $\mu$ F,35V,Elect.
Resistors		
R511,R512	5215061	N08HR3KBC,Semi-fixed
R526,R527	442521004	10ohm,1/2W,Metal oxide film
R531-R534	4500005	0.22ohm,2W,Metal plate
Radiators		
	27160273Y	
Plugs		
P503,P504	25055495	NPLG-2P470

CAUTION:Replacement for transistor of mark \*,if necessary,  
must be made from the same beta group (H Æ ) as  
the original type.

## HEADPHONE TERMINAL PC BOARD(NASW-4328-2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Speaker switch
P601	25045255	YKB21-5009,Headphone terminal

## POWER SUPPLY CIRCUIT PC BOARD(NAPS-4331-2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S901	25035550	△ NPS-111-L512P,Push switch
C901	3500065A	△ DE7150FZ103PAC400V/125V IS capacitor
F902	252074	△ 2A-SE-EAK,Fuse
F902a	25050065	△ YSH-403T,Fuseholder

## TONE CONTROL CIRCUIT PC BOARD (NAAF-4336-2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q401,Q402	222502	NJM4558D-X
	Capacitors	
C401,C402	354761009	10 $\mu$ F,35V,Elect.
C407,C408	354761009	10 $\mu$ F,35V,Elect.
C409,C410	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C411,C412	354780339	3.3 $\mu$ F,50V,Elect.
C413,C414	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C417,C418	354744709	47 $\mu$ F,16V,Elect.
C453,C454	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
	Resistors	
R405,R406	5104228	N11RGHC250KWT22Z,Balance
R417,R421	5104229	N14RHC100KWT22Z,Tone
R418,R422		
R459,R460	5142001	N16RGP100KBTP25,Volume
	Switch	
S451	25035611	NPS-122-L573

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$   
ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.

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